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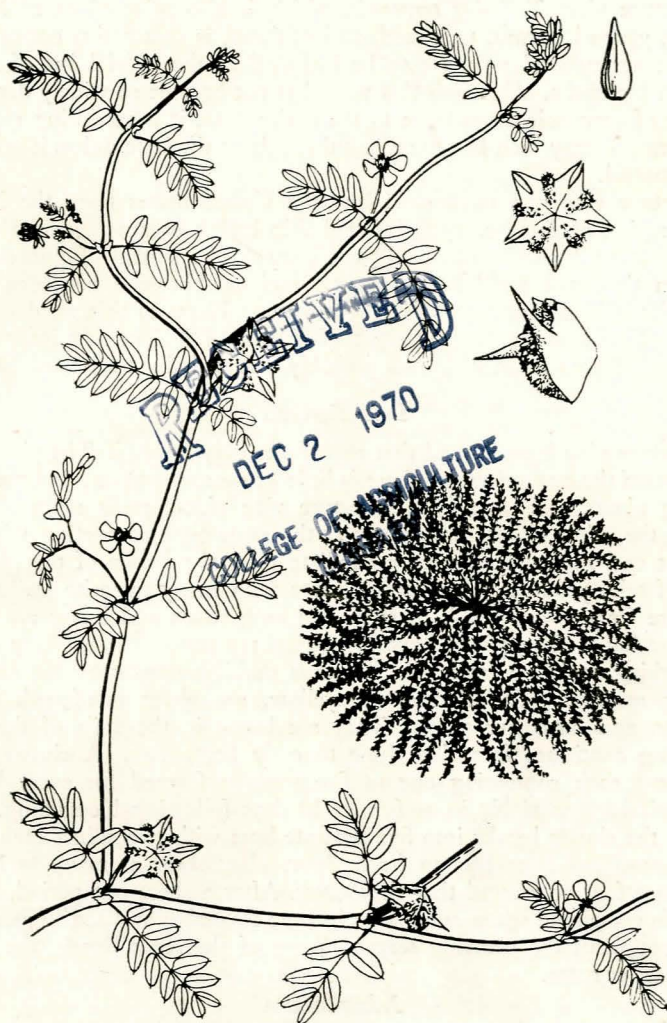
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Puncture Vine—

A Growing Menace in Nebraska



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PUNCTURE VINE: A Growing Menace in Nebraska

N. S. HANSON AND D. L. GROSS

Puncture vine, *Tribulus terrestris*, which is also referred to as Mexican sandbur, ground burnut, tackweed, and calthrop, is destructive enough in its effect on agricultural products to be included in the official list of noxious weeds in Nebraska. Although this weed has not become so widely distributed as to be of economic importance to the entire state, it is spreading rapidly in some areas. It may soon become a pest throughout the state unless it is brought under control.

Puncture vine was introduced into the United States from the Mediterranean region of Europe. Seed infested ship ballast became spread along the waterfronts on both the east and west coasts. The spread of puncture vine has been the most rapid in the coastal regions, but seed has been carried inland through various means of dissemination. Plants of this weed were first found in Kansas along railroad rights-of-way in 1898. The first infestation of land by puncture vine in Nebraska probably occurred about the same time.

Description

Puncture vine is an annual that reproduces only by seed. The plants grow prostrate on the ground where there is little or no competition. Between erect-growing plants such as alfalfa, puncture vine plants grow more erect and lean on the other plants for support at the same time competing with them for light and moisture. The stems radiate from the crown of the plant and branch freely, producing compound leaves with many opposite leaflets. The stems are frequently reddish in color and both stems and leaves are covered with fine hairs. The plants have branching tap roots that are very efficient in absorbing moisture from the soil, thus making puncture vine extremely drought resistant. The flowers are yellow, are about one-fourth inch in diameter, and have five petals. They are borne in the axils of the leaves. Flowering continues from late June to early September. A cluster of five spiny burs each containing one to five seeds is formed for every blossom. The seeds become viable in as few as 10 days following blossoming. When mature, the cluster breaks into five separate burs with two spines each. Viable seed is produced from July to frost. Some plants bear as many as 100 burs per square foot of ground that they cover. After a short rest period, some of the seeds germinate when conditions become favorable and seedlings may appear throughout the growing season. Some of the seeds live in the soil for eight years or more.

Adaptation

Puncture vine is adapted to a wide range of soil types. It is found on both heavy clay and sandy soils in Nebraska. Although there is as yet little puncture vine in the sand hills, it is reasonable to expect that this pest may become established there in later years unless active control measures are employed.

Waste places, public grounds such as parks and playgrounds, roadsides, railroad rights-of-way, and vacant lots are the most common habitats for puncture vine. Thus far, there is only a small amount of infestation in cultivated fields in this state.

Economic Importance

Although losses through damage caused by puncture vine may be great, they are hard to evaluate and, therefore, it is impossible to get even an approximate picture of the economic importance of this pest. There are many ways, however, in which agricultural products are affected by the burs, and losses are expressed by lowered value of these products. The destructiveness of puncture vine is manifested through increased cultivation and harvest costs, lowered quality of infested hay and forage crops, bodily injury by burs to both humans and livestock, and damage to rubber tires through punctures. Reduction in land value due to puncture vine is dependent on the amount of loss caused in various ways to agricultural products from infested land. In general, puncture vine is a nuisance wherever it grows.

Dissemination

Dissemination of puncture vine seed is due largely to the spiny burs becoming attached to animals or to objects that are moved from place to place. Some common means of dissemination are: rubber-tired equipment, railroad cars and trucks carrying infested materials, tillage implements, animals, infested gravel spread on roads, irrigation water, and in general anything to which the spiny burs become attached. Of the various means of dissemination, rubber-tired equipment is probably the most important at present and will continue to increase in importance as more agricultural implements become equipped with rubber tires.

Eradication Methods

Cropping Methods, Cultivation, and Hoeing. Commonly recommended crop rotations can be followed, but special care should be exercised to assure that puncture vine plants do not seed. If stubble ground is to be left unplowed, it is considered a good annual-weed control practice to sub-till or disk the field two or three times in the fall following harvest. Such a practice will also keep puncture vine from seeding and getting established. If the field is to be plowed, this should be done before the weeds set seed. Good farming practices will usually be effective in preventing infestation in cultivated fields and also in eradicating the weed if it has become established, since well-timed cultivations prevent the plants from seeding. In corn fields, some hoeing may be necessary after the crop is laid by. The plants must be cut off not later than the appearance of the first blossoms in order to prevent seeding.

Burning. Where plants have seeded, the seed can be killed by cutting off the plants with a hoe and burning them when dry. Burning of green, growing plants with a special burner is effective, but is both time-consuming and costly.

Chemicals. A mixture of one pound of sodium chlorate in four gallons of water or the same amount of ammonium sulfamate used as a drenching spray will kill puncture vine plants, but will not kill the seed. If such a spray is to be used, the application should be made when the first plants are in bloom.

Plants with mature burs and viable seed may be sprayed with 1 to 1½ gallons per square rod of Diesel oil, any light fuel or crude oil, waste cylinder oil, or crank case drainings that can be sprayed satisfactorily as a mist. Such oils will kill both plants and seeds of puncture vine.